

USSR

UDC 621-183.2:778.4

TSELIKOV, A. I., Academician, MOROZOV, B. A., Doctor of Technical Sciences, SURKOV, A. I., Candidate of Technical Sciences, and SERGEYEV, A. V., Engineer

"Potentialities of the Application of Holography in Heavy Machinebuilding"

Moscow, Vestnik Mashinostroyeniya, No 9, Sep 73, pp 7-11

Abstract: The holographic installation developed by the All-Union Scientific Research, Planning, and Design Institute of Metallurgical Machinery is described by reference to its optical schema. The results of the application of holographic interferometry for the study of deformations and dislocations of various parts, a cramp, a supporting wall, a cast in block channel beam of a hydraulic press, produced of steel and organic glass, are discussed by reference to interferograms produced by the method of double exposure. From shown interference lines of a lead specimen was plotted the distribution diagram of elastic and plastic deformations for two changing load conditions. Such diagrams can be plotted for free surfaces of plastically deformable bodies independent from their form and their material; they provide an idea of the influence of the form of the part and also of the nature of its material on the character of the propagation of deformations. Seven figures.

1/1

USSR

UDC 621.317.08 3

MISYURA, V. A., PIVEN', L. A., LITVINENKO, O. A., SOMOV, V. G.,
NABOKA, A. M., SURKOV, A. K., and KARATEYEV, N. G.

"Mobile Radio Ionosphere Complex for Investigating the Ionosphere
and Radio Wave Propagation"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl.
Sekt. 3 (Tenth All-Union Conference on the Propagation of Radio
Waves; Report Theses; Section 3--collection of works) "Nauka,"
1972, pp 104-108 (from RZh--Radiotekhnika, No 10, 1972, Abstract
No 10A427)

Translation: A mobile radio ionosphere complex, developed in the
Khar'kov University for complex investigations of the ionosphere
and the propagation of radio waves by the method of vertical prob-
ing and the method of single-frequency and multifrequency differen-
tial Doppler and Faraday effects in satellite and rocket signals,
is described. The mobility of the complex permits, in addition to
conducting independent measurements, combination measurements with
devices for noncoherent scattering and with experiments using geo-
physical and meteorological rockets, as well as various shortwave
ranges and the like. Resume

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USSR

UDC 621.317.77

MISYURA, V. A., PIVEN', I. A., SURKOV, A. K., SOMOV, V. G.,
KARATEYEV, N. G., ZAGVOZDKIN, B. V., NABOKA, A. M., LITVINENKO,
O. A., and KAPANIN, I. I.

"Systems of Phase and Doppler Measurements in a Mobile Radio
Ionosphere Complex"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl.
Sekt. 3 (Tenth All-Union Conference on the Propagation of Radio
Waves; Report Theses; Section 3--collection of works) "Nauka,"
1972, pp 109-113 (from RZh--Radiotekhnika, No 10, 1972, Abstract
No 10A426)

Translation: A device for phase probing and a system for recording
the Faraday and Doppler effects in artificial earth satellite sig-
nals and rockets, including a series of multichannel receiver and
recorder devices operating at two, three, and four coherent fre-
quencies (20, 40; 24, 48, 144; 20, 30, 90, 180; 150 and 400 MHz,
and others), are described. The difference between the phase
probing system and those now known is the separation of the mea-
sured phase differences with a heterodyne frequency and consequent
narrow-band filtration. Resume
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USSR

UDC 547.13

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NESMEYANOV, A. N., Academician, POSTNOV, V. N., LESHCHIEVA, I. F., SURKOV, E. A., and SAZONOVA, V. A., Moscow State University imeni K. V. Lomonosov

"Ferrocenylvinylcarbonium Ions"

Moscow, Doklady Akademii Nauk SSSR, Vol 200, No 4, 1971, pp 858-861

Abstract: The vinylog of the diphenylferrocenylcarbonium ion during its formation under goes an allyl shift to give an α -ferrocenylcarbonium ion. Since the p-dimethylamino group is a strong carbonium ion stabilizer, the authors undertook to compare the part played by the p-dimethylaminophenyl and ferrocenyl groups simultaneously in the stabilization of the allyl cation. The tetraphenylborate of the vinylog of p-dimethylaminodiphenylferrocenylcarbonium was obtained from β -ferrocenylvinyl-p-dimethylaminodiphenylcarbinol by precipitation with sodium tetraphenylborate in glacial acetic acid. The salt was bound by its α -carbon atom (relative to ferrocene) with dimethylaniline in the p-position. To determine the structure of the resultant carbonium ion, spectra were taken of its salts -- tetraphenylborate and borofluoride, as well as the spectrum of β -ferrocenylvinyl-p-dimethylaminodiphenylcarbinol. The results indicate that the allyl cation reacts

1/2

USSR

NESMEYANOV, A. N., et al., Doklady Akademii Nauk SSSR, Vol 200, No 4, 1971, pp 858-861

like a typical α -ferrocenylcarbonium ion with its α -carbon atom. This indicates localization of a significant part of the formed positive charge on the latter. The almost quantitative reaction on the α -carbon indicates the prevailing influence of the ferrocenyl group in the stabilization of the carbonium ion as compared with the p-dimethylamino group.

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1/2 006

UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--PROBLEMS THAT CONFRONT FACTORY STANDARDIZATION WORKERS -U-

AUTHOR--SURKOV, G.D.

COUNTRY OF INFO--USSR

SOURCE--STANDARTY I KACHESTVO, 1970, NR 2, PP 58-60

DATE PUBLISHED-----70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES

TOPIC TAGS--INDUSTRIAL STANDARD, MACHINE INDUSTRY, INDUSTRIAL PRODUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1985/0327

STEP NO--UR/0422/70/000/002/0058/0060

CIRC ACCESSION NO--AP0100814

UNCLASSIFIED

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CIRC ACCESSION NO--AP0100814
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--18SEP70

URGENT PROBLEMS TYPICAL OF THE ACTIVITIES OF STANDARDIZATION SERVICES AT
SERIAL PRODUCTION MACHINE BUILDING FACTORIES. DESCRIPTION IS GIVEN OF
THE ATTEMPTS TO SOLVE THESE PROBLEMS, MADE BOTH BY THE AUTHOR'S OFFICE
AND BY THE OFFICES AT SIMILAR FACTORIES.

UNCLASSIFIED

UDC

UDC: None

PLAKHOV, A. M., CHERNENKO, O. D., MALIKOV, A. I., KOSTYUCHENKO,
V. I., LYSENKO, V. S., SURKOV, N. I., KIRPICHNIKOV, V. A., SMIRNOV,
I. A., and SAVCHENKO, L. I.

"A Device for Ultrasonic Defectoscopy"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obrasty,
tovarnye znaki, no 4, 1973, p 98, no 363912

Abstract: The distinctive system in this device is one in which the sensor searching for the defects is mounted between rollers fixed to the lower side of the transmitting device, and is thus free to move around the workbench. A diagram of the mechanical arrangement, which improves the productivity of the device and its control, is given.

USSR

UDC 576.858.9(T2).098.396.07

KALININ, V. N., SURKOV, V. Y., and TIKHONENKO, T. I., Institute of Virology
imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, and Chair of
Virology, Biology and Soil, Faculty Moscow State University

"Isolation, Purification, and Concentration of Internal T2 Bacteriophage
Protein"

Moscow, Voprosy Meditsinskoy Khimii, Vol 17, No 4, 1972, pp 422-426

Abstract: Two methods were employed to isolate and purify internal T2 bacterio-
phage protein. The 1st employed chromatography on phosphorylated cellulose.
Ultraviolet absorption spectra of the proteins obtained indicated contamination
by DNA. Proteins were also contaminated with phosphocellulose degraded by the
alkaline buffer with which the proteins were eluted. Because these contaminants
could not be removed, another method was tried, employing electrophoresis in
polyacrylamide gel with a homemade instrument. After 18 hours of electrophor-
esis, the resulting protein had a typical protein absorption spectrum. The
protein appeared as 2 fractions, both with a sedimentation constant of 1.34S.
Whether or not these are two different proteins is not known. Protein obtained
by the second method is fully usable for physicochemical and biological
research.

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- 14 -

1/2 006 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--AGRICULTURAL TECHNOLOGY AGAINST ROOT ROT AND SPRING WHEAT PESTS -U-
AUTHOR--(02)-PAKHOMOVA, I.S., SURKOV, V.YA.
COUNTRY OF INFO--USSR
SOURCE--ZASHCHITA RASTENIY, 1970, NR 3, P 20
DATE PUBLISHED-----70
SUBJECT AREAS--AGRICULTURE
TOPIC TAGS--WHEAT, PLANT DISEASE, AGRICULTURE R AND D
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO-----FD70/605048/F03 STEP NO--UR/0433/70/000/003/0020/0020
CIRC ACCESSION NO--AP0143323
UNCLASSIFIED

2/2 006

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0143323

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. METHODS OF AGRICULTURAL TECHNOLOGY USED TO COMBAT ROOT ROT OF SPRING WHEAT (CAUSED BY HELMINTHOSPORIUM SATIVUM) AND SPRING WHEAT PESTS WERE STUDIED IN 1967-1968 IN KRASNOPARTIZANSKIY DISTRICT (NEAR SARATOV) IN FIELDS PLANTED WITH THE MELYANOPUS-26 VARIETY OF SPRING WHEAT. TESTS WERE CONDUCTED IN ONE MODERATELY ARID YEAR (1967) AND ONE WET YEAR (1968) IN A CHERNOZEM AREA. TRIALS OF THREE TYPES OF AUTUMN PLOWING SHOWED THAT THE GREATEST NUMBER OF DAMAGED PLANTS WERE OBSERVED WHEN STEMS REMAINED ON THE SURFACE, PROMOTING INFECTION. CORN WAS THE BEST PRECURSOR CROP. COMBINED WITH DEEP PLOWING, USE OF CORN PROMOTES WHEAT DEVELOPMENT, INCREASING RESISTANCE OF PLANTS TO ROOT ROT. THE NUMBER OF GRAIN BEETLES AND WHEAT THRIPS PER M² DECREASED FROM 1967 TO 1968, WHEN WHEAT FOLLOWED CORN, APPARENTLY BECAUSE FREQUENT CULTIVATION DESTROYS LARVAE. FACILITY: SARATOVSKIY SEL'SKOGO KHOZYAYSTVA INSTITUT, SARATOV AGRICULTURAL INSTITUTE.

UNCLASSIFIED

USSR

KIL'DYUSHOV, M. S. and SURKOV, YE. L., Moscow Engineering Physics Institute

"Hyperspherical Functions in the Five-Body Problem"

Moscow, Yadernaya Fizika, Vol 14, No 3, 1971, pp 551-566

Abstract: An algorithm for constructing a system of hyperspherical functions for the quantum-mechanical five-body problem is considered. First a reduction is carried out, beginning with the step $O_4 \supset S_5$, an embedding problem. Then suitable kinematic variables are introduced. It is thereupon explained which representations of S_5 are contained in the irreducible representation O_4 . Next, employing suitable notation, projective operators are used to construct the matrix for the transition from the basis $O_4 \supset O_3 \supset O_2$ to the basis $O_4 \supset S_5 \supset S_4 \supset S_3 \supset S_2$. Another possible reduction chain

$$\begin{array}{ccc} O_4 & \supset & O_2 \otimes O_2 \\ U & & U \quad U \\ S_5 & \supset & S_3 \otimes S_2 \end{array}$$

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KILDYUSHOV, M. S. and SURKOV, YE. L., Yadernaya Fizika, Vol 14, No 3, 1971, pp 551-566

is considered, which corresponds to separating subsystems of two and three particles and which is better adapted for computing matrix elements of two-particle operators. An appendix derives matrixes for the transition from the first basis to the second. Finally, a last section presents the reduction $O_{12} \supset O_3 \otimes O_4$ and computes the spectrum of representations when $k < 5$. The algorithm is formulated concisely in the concluding section.

2/2

- 84 -

Miscellaneous

USSR

UDC 550.4

VINOGRADOV, A. P., MAROV, M. Ya., and ~~SURKOV, Yu. A.~~, Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Acad. Sc. USSR, Moscow

"Investigation of the Venus Atmosphere by the Soviet Automatic Stations "Venera-4," "Venera-5," and "Venera-6"

Moscow, Geokhimiya, No 4, April 1972, pp 387-401

Abstract: Scientific apparatus used on the automatic stations "Venera-4, 5 and 6" is described; data received on the chemical composition, temperature and pressure of Venus are reported. Venus atmosphere consists of the following mixture: CO₂ - 97 ± 4%, nitrogen - less than 2%, oxygen - less than 0.1%, water - about 12 mg/l (at the level of condensation). Temperature and pressure determinations are reported graphically; initial pressure of 0.6 atm corresponded to 25°C, final pressure at which measurements were received was 27 atm at 320°C. The atmospheric density increased uniformly with descending height. Using these data the structure of the Venusian atmosphere, its origin and evolution is speculated upon and compared to earth. A conclusion is reached that by the endogenous processes both the earth and Venus have similar history. At the same time, these planets differ by their exogenous processes occurring on the surfaces. This obviously is due to the difference in proximity to the sun which resulted in the formation of the heavy carbon dioxide atmosphere on Venus.

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USSR

Miscellaneous

UDC 550.4

SURKOV, YU. A., and ANDREYCHIKOV, B. M., Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR, Moscow

"The Composition and Structure of the Venus Cloud Layer"

Moscow, Geokhimiya, No 10, Oct 73, pp 1435-1440

Abstract: Gasanalytical measurements carried out by means of equipment installed on the automatic interplanetary stations Venera-4, Venera-5, and Venera-6 indicated that the principal component of the atmosphere of Venus is CO_2 and that the content of N_2 in this atmosphere is $\sim 2\%$ and the content of $\text{O}_2 \leq 0.1\%$. Consideration of all available data on Venus from the geochemical standpoint and determinations of NH_3 by an apparatus installed on Venera-8, in which tetrabromosulfophthalein was used as an indicator (cf. Surkov et al, DAN SSSR, Vol 213, No 6, 1973), led to the following conclusions: in regard to the composition of the cloud layer of Venus. The bottom layer of clouds, which have a very low density and a lowest elevation corresponding to a pressure of 10 atm, consists of NH_4Cl . The layer above this, starting with a pressure of 1-2 atm, consists mainly of NH_4 carbonates.

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USSR

SURKOV, YU. A., and ANDREYCHIKOV, L. M., *Geokhimiya*, No 10, Oct 73, pp 1435-1440

Above this layer a mixture of ammonium compounds including NH_4Cl and ammonium carbonates is present. Any ammonium salts that precipitate downwards in the Venus atmosphere decompose, whereupon the NH_3 that is formed diffuses upwards together with water vapor. Only very small amounts of NH_3 and H_2O are present in the lower layers of the atmosphere.

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- 36 -

Acc. Nr.: AT0045337

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Ref. Code: UR0020
JPRS 58052

Determination of Composition of Venusian Atmosphere

(Abstract: "Study of the Composition of the Venusian Atmosphere on the 'Venera-5' and 'Venera-6' Automatic Stations," by Academician A. P. Vinogradov, Yu. A. Surkov and B. M. Andreychikov, Institute of Geochemistry and Analytical Chemistry; Moscow, Doklady Akademii Nauk SSSR, Vol. 190, No. 3, 1970, pp. 552-554)

"Venera-5" and "Venera-6" reached Venus and made a smooth descent into its atmosphere. Both made measurements during their descent in the segment where pressure changed from 0.6 to 27 atm and the temperature changed from 25 to 320°. The purpose of this experiment was a further investigation of the physicochemical characteristics of the Venusian atmosphere and especially a more precise determination of its chemical composition. The probes carried gas analyzers similar to those carried by "Venera-4," with some improvements introduced. Each probe carried two instruments. Both instruments were used in determining the atmospheric content of carbon dioxide, nitrogen, water and oxygen. The determinations were made during the parachute descent at pressures from ~ 0.6 to ~ 10 kg/cm². The gas analyzers had two types of sensors, one of which measured

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the quantitative content, while the others determined only the upper or lower limit of the content of a particular component. Each probe measured the atmospheric content twice. The first analysis by "Venera-5" was made soon after opening of the main parachute when atmospheric pressure was ~ 0.6 kg/cm² and the temperature was $\sim 25^\circ$. The second determination by "Venera-5" was in the lower part of the atmosphere at a pressure of about 5 kg/cm² and a temperature $\sim 150^\circ$. "Venera-6" also made two determinations at different altitudes. The first was at a pressure of about 2 kg/cm² and a temperature of 85° ; the second was made when the pressure attained ~ 10 kg/cm² and the temperature was about 225° .

Composition of Venusian Atmosphere

Components

"Venera-4" data

Data from "Venera-5" and "Venera-6"

CO ₂ , %	90+10
N ₂ , %	≤ 7 (possibly ≤ 2.5)
O ₂ , %	0.4-1.5
H ₂ O (at P 0.6 atm) mg/liter	1-8

97+4
≤ 2
≤ 0.1
~ 11

The temperature variation with altitude in the entire measurement range was close to adiabatic. It can be concluded that pressure and temperature at the planetary surface are about 100 atm and 500° respectively.

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UDC 539.4:536.453

BERSENEVA, F. N., SURKOV, YU. P., SOKOLOV, YE. N.

"Investigation of the Thermal Stability of the Structural State of EI-437B Alloy Subjected to High-Speed and Slow Plastic Deformation Under High-Temperature Mechanical Working"

V sb. Vysokoskorostn. deformatsiya (High Speed Deformation -- Collection of Works), Moscow, "Nauka", 1971, pp 115-118 (from RZh-Mekhanika, No 3, Mar 72, Abstract No 3V1532)

Translation: Ingots of the alloy EI-437B were subjected to deformation under 10% deformation at 1080° at rates of 10.1 and 0.001 sec⁻¹. The structures of the samples in the initial state and also after heating at 1080° were studied by metallographic and rentgenographic means. It was shown that the structure obtained as a result of high-speed deformation is considerably different from the structure formed during slow deformation. Differences in the structure imparted by preliminary deformation are held persistently and disappear only upon the completion of recrystallization. Authors abstract.

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- 64 -

USSR

UDC 539.374

SURKOV, Yu. P., BERSNEVA, F. N., and SOKOLKOV, Ye, N., Institute of Metal Physics, Academy of Sciences USSR

"Thermal Stability of the Structure of E1437B Alloy After High-Temperature Heat and Mechanical Treatment at Various Deformation Rates"

Moscow, Fizika Metallov i Metallovedeniye, Vol 30, No 5, 1970, pp 963-966

Abstract: Changes in the structure of specimens of E1437B alloy deformed by 10% at 1080° at 10, 1, and 0.001 sec⁻¹ with subsequent heating were studied. The structure of specimens subjected to high-speed deformation (1 and 10 sec⁻¹) was characterized by more incomplete processes of fragmentation, the presence of a large number of dislocations ordered along slipping planes, and a high level of distortion of the material. The behavior of the structures during subsequent high-temperature holding differed significantly for specimens subjected to slow and fast deformation. The most notable changes were observed in the structure of specimens deformed at high speeds (10 sec⁻¹). They consisted of restructuring of dislocation configurations with the formation of a subgrain structure and subsequent growth of elements of the structure. However,

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USSR

~~SURKOV, Yu. P.~~, et al, Fizika Metallov i Metallovedeniya, Vol 30, No 5, 1970, pp 963-966

the differences in the deformation structure (degree of disorientation, size of fragments) resulting from preliminary high-temperature upsetting were not eliminated during subsequent heating.

USSR

UDC 620.181;539,374;546.74.75

LEVIT, V. I., SURKOV, YU. P., SOKOLKOV, YE. N., and ZHEURAVEL', L. V., Institute of Physics of Metals, Academy of Sciences USSR

"Aging of KhN77TYuR Alloy After Plastic Flow"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 29, No 6, Jun 70, pp 1198-1203

Abstract: A study is made, using methods of electrical resistance and transmission electron microscopy, of the processes of decay of a saturated solid solution in the KhN77TYuR alloy with different dislocation structures produced by deformation at different temperatures. For estimating the effect of distribution of dislocations on the processes of subsequent aging those degrees of deformation at 20 and 1030°C were selected, which in all deformed specimens ensured a yield point of 44-47 kg/mm². Changes in mechanical properties and structure in the process of aging are determined. It is shown that the higher strength properties after high-temperature thermomechanical treatment are due mainly to the increased density of emissions of the intermetallide γ' -phase. In addition, the notched form of the boundaries of grains and the separation of carbides on such boundaries impede the intergrain disintegration and ensure adequate ductility. The authors thank N. A. Kompaneytsev for help in conducting tests on mechanical properties, R. R. Romanova and R. A. Karakhanyan for help in preparing and checking of thin foil, and S. N. Popova for valuable suggestions during discussion.

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Steels

USSR

UDC 669.15-194.56.018.2

GREKOV, N. A., SILINA, YE. P., and a SURKOVA, A. P., Leningrad

"Structure and Properties of Explosive-Hardened Austenitic Steels"

Moscow, Izvestiya Akadenii Nauk SSSR, Metally, No 1, Jan/Feb 74, pp 112-114

Abstract: The mechanical properties and fine structure changes were studied for two austenitic steels (60Kh3G8N8V and 4-Kh3G18) which had been plastically deformed by low-pressure shock waves. The first steel is very stable with a martensite transformation point below -196°C while the other steel is less stable (M_s near -120°C) especially during plastic deformation. It was noted that the sequence of transformation stages ($\gamma \rightarrow \epsilon$ and $\epsilon \rightarrow \alpha$) is preserved during high-speed shock-wave deformation. In the steel with high austenite stability the ϵ -martensite transformation and twinning start only after a high-density dislocation matrix is formed. The degree of improvement of a cellular dislocation structure is better the more stable the austenite. For a lower stability the tendency of steel toward deformation hardening from shock waves increases which can be associated with intensive occurrence of $\gamma \rightarrow \epsilon$ transformation and twinning processes. Three figure, one table, one bibliographic references.

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1/3 017 UNCLASSIFIED
TITLE--DIAMOND TOOL BASED ON A CERAMIC BINDER -U-

PROCESSING DATE--25OCT70

AUTHOR--(02)-BALKEVICH, V.L., SURKOVA, I.A.

COUNTRY OF INFO--USSR

SOURCE--STEKLO KERAM. 1970, 27(2), 22-4

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR, EARTH
SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--DIAMOND TOOL TECHNOLOGY, HARD ALLOY, CERAMIC BINDER, METAL
MACHINING, CUTTING TOOL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1996/1957

STEP NO--UR/0072/70/027/002/0022/0024

CIRC ACCESSION NO--AP0118918

UNCLASSIFIED

2/3 017

CIRC ACCESSION NO--AP0118918
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT. THE USE OF A CERAMIC BINDER MAKES IT POSSIBLE TO USE DIAMOND TOOLS MORE WIDELY AND, IN PARTICULAR, MAKES IT POSSIBLE TO WORK STEEL TOGETHER WITH HARD ALLOYS. CERAMIC BINDERS ARE GENERALLY DIVIDED INTO FRITTED BINDERS AND SINTERING BINDERS. IN THE PRESENT STUDY, CERTAIN TECH. FEATURES OF PREPG. A DIAMOND TOOL ON A SINTERING BINDER AND THE RESULTS OF THE TESTING OF THIS TOOL ARE PRESENTED. THE PROPOSED SINTERING CERAMIC BINDER EMPLOYED CONSISTS OF A MIXT. OF REFRACTORY CLAY AND NATURAL FLUXES (SUCH AS NEPHELINE SYENITE AND SPUDUMENE). THE PRESENCE OF SPUDUMENE PRODUCES A DECREASE IN THERMAL EXPANSION OF THE BINDER, AND THEREBY CAUSES AN INCREASE IN ITS THERMAL STABILITY. WITH THIS BINDER, DIAMOND CONTG. RINGS WITH AN EXTERNAL DIAM. OF 150 MM AND A HEIGHT OF 3 MM WERE PREPD. POLY(VINYL ALC.) WAS USED FOR THE TEMPORARY BINDER. PRIOR TO THE SHAPING OF THE RINGS, CERTAIN TECH. PARAMETERS WERE DEFINED, SO AS TO SELECT THE OPTIMUM PRESSING CONDITIONS, WHICH WERE DETD. (1000 KG-CM PRIME2, MOISTURE CONTENT EQUALS 8.3PERCENT). THE RINGS PRESSED UNDER THESE CONDITIONS WERE, AFTER SHORT TERM DRYING, FIRED IN A SPECIALLY CONSTRUCTED LAB. FURNACE WITH A PROTECTIVE GAS (N, HE) ATM. THE TECHNIQUE OF FIRING IN C CONTG. CHARGES HAS BEEN KNOWN FOR A LONG TIME; HOWEVER, IT HAS BEEN EMPLOYED FOR THE 1ST TIME IN THE PRESENT WORK TO PROTECT THE DIAMOND GRAINS FROM OXIDN. THE RINGS WERE PLACED IN THE FURNACE IN A HORIZONTAL FASHION IN GROUPS OF 8-10 PIECES. THE CONSTRUCTION OF THE HEATER MAKES POSSIBLE UNIFORM DISTRIBUTION OF THE TEMP. ALONG THE HORIZONTAL SECTION OF THE FURNACE.

UNCLASSIFIED

3/3 017

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118918

ABSTRACT/EXTRACT--FACILITY: MOSK. KHIM. TEKHNOL. INST. IM. MENDELEEVA,
MOSCOW, USSR.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--30UCT70
TITLE--ANTITUMOR ACTIVITY OF NEW PREPARATIONS OF THE CHLORETHYLAMINE GROUP
NOT INFLUENCING HAEMOPOESIS -U-
AUTHOR--(05)--VASILYEVA, L.S., DYACHKOVSKAYA, R.F., SCHUPPE, N.O.,
PARKHOMENKO, I.I., SURKOVA, N.I.
COUNTRY OF INFO--USSR
SOURCE--IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA, 1970, NR 3,
PP 459-463
DATE PUBLISHED--70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ANTITUMOR DRUG EFFECT, HEMATOPOIESIS, AMINE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3001/1608 STEP NO--UR/0216/70/000/003/0459/0463
CIRC ACCESSION NO--AP0127099
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0127099
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. ANTITUMOR ACTION OF

CHLORALHYDRATES N,N,DI(2,CHLORETHYL)PINOAMPHILAMINE (I);
N,N,DI(1,CHLORETHYL)PINILAMINE (II) AND 3,5,DI,TERTBUTYL,4,OXI,N, NI,DI
(BETA,DI,CHLORETHYL BENZILAMINE) (III) WAS STUDIED BOTH IN EXPERIMENTS ON
ANIMALS AND IN TISSUE CULTURE. IT WAS FOUND THAT THE COMPOUND II
DISPLAYED MAXIMAL ACTIVITY. THE INFLUENCE OF THE COMPOUND II ON THE
PROCESS OF PROTEIN BIOSYNTHESIS IN TUMOR CELLS WAS REGISTERED. IT WAS
FOUND THAT THE SUBSTANCES STUDIED DO NOT INFLUENCE NORMAL HAEMOPOESIS.
FACILITY: INSTITUTE OF CHEMICAL PHYSICS, ACADEMY OF SCIENCES,
USSR.

UNCLASSIFIED

USSR

UDC 621.7.011

OKHRIMENKO, Ya. M., SMIRNOV, O. M., SURMACH, L. V., KUCHINOV, M. M.
"Superplasticity of VTZ-1 Titanium Alloy"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Svedeniy, Tsvetnaya
Metallurgiya, No 4, 1972, pp 133-136.

Abstract: The optimal temperature and rate conditions for deformation of VTZ-1 alloy to the state of superplasticity are established: temperature interval 800-950°, rate interval 10^{-3} - 10^{-4} sec⁻¹; it is shown that the single-phase β area should not be entered during heating. Under these temperature and rate conditions, clear signs of the state of superplasticity were produced in VTZ-1 alloy, i.e., exceptionally high values of relative elongation ($\delta = 950\%$) in combination with low deformation resistance ($\sigma = 0.4-4$ kg/mm²) and a coefficient rating sensitivity of deformation resistance to deformation rate $m > 0.4$. These data indicate good prospects for the use of the effect of superplasticity in the pressure working of metals.

1/1

- 49 -

SURMANIDZE, R.D.

Medical
Sciences

SEVENTY-FIFTH ANNIVERSARY OF THE AZHAR ASR MEDICAL SOCIETY

Address by R. B. Shvynidze, Candidate of Medical Sciences (Antony), Moscow, USSR, Azharnobkhrameniye Hospital, No. 4, 1977, submitted: 11.12.77, pp. 74-76

intensification of the social movement in Russia in the second half of the 19th century resulted in the foundation of medical societies not only in the noncapital cities but also in the capital cities. On 5 April 1855, the Caucasian Medical Society was founded in Tiflis (formerly Tbilisi), and it was governed by a board that gave it fairly limited autonomy. Nevertheless, they facilitated the foundation of new societies in the cities.

At the request of the physicians of Barmat, with the help of physicians belonging to the Caucasian Medical Society, by late September 1896, and on 20 November of the same year, the Government permitted to organize a new branch of the same society, the Government authorized the initiation of the society in Barmat on the 1st in the Caucasus [?]. The members of the society were the following physicians: Dr. S. A. K. A. Khelidze, G. I. Volkov, and others.

In giving its permission to create this society, the Soviet stateocracy pursued its own goals; it tried to innately laboratorial influence on the living intelligentsia, to obtain some improvement in scientific and artistic working conditions for the latter, and to improve in scientific and artistic pathology among officers and soldiers, as well as to develop personal factors in the creation of regional, clinical factors. And this required special, direct intervention of the state to introduce new members of the society some of the military medical service in the Caucasus.

The first chairman of the Batumi Medical Society was V. I. Fuzzevskiy, an army physician, who was then replaced by the head of the local military hospital, A. S. Shishkov [2].

The military bureaucratic method of administration did not allow the society members to display any initiative, to work on current issues, or to

OK/MAVA G.G.

JPRS 58052
25 April 1973

INVESTIGATION OF STRENGTHENING PROPERTIES OF
LAYERS PHASES IN AUSTENITIC STEELS

Article by E. V. Izrael (Academy of Sciences, Ukrainian SSR),
M. I. Linchuk, N. S. Shcheglov, and G. I. Shcheglov, Academy of Sciences,
Novosibirsk, Institute of Metallurgy, Siberian Branch, Academy of Sciences
Soviet Union, Novosibirsk, Vol 56, No 3, 1971, submitted 9 September 1971,
pp 612-620

Intermetallic compounds present much interest for

the investigation of intermetallics including, on one side, the physical and chemical properties and, on the other side, the technological use of intermetallics. Rapid progress in the study of intermetallics is particularly evident in the case of alloys in which the intermetallic phase is formed by the reaction of a metal with a non-metallic element (such as carbon, nitrogen, boron, etc.) or by the reaction of a metal with a metalloid (such as silicon, germanium, etc.).

Phases forming between elements with a ratio of atomic diameters close to 1/2 comprise an important group of intermetallics. These phases have the structure of a layer lattice (type AB₂) and are usually crystallized with a plane (type AB₂) or with a cubic lattice of close-packed atoms (type AB₂). In austenitic heat-resistant steels, the role of metal B (ordinarily in solid solution with a Ti and Fe) is to play the role of metal A (most often, Zr, Nb, Ta, etc.).

It was assumed in [1] that bonding in layers phases carries a metallic nature. As the reason for this the low heats of formation (several kilocalories per gram-atom) are

- 1 -

(1 - USSR - 1)

Molecular Physics

USSR

UDC 669. 355

TABADZE, F.N., Academician of the Georgian SSR Academy of Sciences, SURMAVA, G.G., and SVANIDZE, K.G.,

"Determination of the Diffusion Characteristics of Zinc Into Copper According to the Initial Stage of Whisker Thickening"

Tbilisi, Soobshcheniya Akademii Nauk Gruzinskoy SSR, Vol 60, No 1, Oct 70, pp 53-56

Abstract: Determination has been made of the diffusion coefficient of zinc into the following copper materials of the indicated approximate average diameters" thin whiskers, 5 microns; thick whiskers, 20 microns; deformed whiskers, 6 microns; thin Ulitovskiy microwire, 6 microns; and thick microwire, 20 microns, at temperatures of 600, 650, and 700 degrees C. Determination was based on measuring the initial stage of whisker thickening as the zinc diffused from the surface. A known solution to the one-dimensional problem of diffusion from a source with constant concentration was used, exploiting the fact that the cylindrical shape of the specimen has no significance for the initial stage of diffusion when the average path of diffusion is much smaller than the specimen. The diffusion coefficient of the zinc in whiskers was 1-2 orders lower than in thick copper wire. Also measured were the structural factor, which was 6-7 orders lower in whiskers, and

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USSR

TABADZE, F. N., et al, Soobshcheniya Akademii Nauk Gruzinskoy SSR, Vol 60, No 1, Oct 70, pp 53-56

the energy of activation, which was 2-3 times lower. These coefficients, based on thickening in the initial stage, coincide with previous findings on data obtained in processing data at areas close to saturation for thin materials (both whiskers and wire), but the differences were great in the case of thicker materials. Coefficients averaged about 3 times higher at 700 degrees than at 600 degrees, except for thick microwire, for which the difference was 10 times as great. The coincidence of the energy of activation diffusion in thin whiskers with the previously reported energy of displacement of vacancies in copper confirms findings elsewhere that new vacancies do not form during diffusion in whisker crystals.

2/2

.. 44 ..

Epidemiology

USSR

UDC 59:616.981.455(574.52)

AYKIMBAYEV, M. A., KORNEYEV, G. A., KUNITSA, G. M., TLEUCABYLOV, M. K., TRYKIN, V. S., SKVORTSKOVA, S. S., KUZIN, I. P., and SHIRMIN, V. M., Central-Asian Scientific Research Antiplague Institute, Alma-Ata

"A Tugai Focus of Tularemia in Dzhambulskaya Oblast in the Lower Chu Flow"
Moscow, Zoologicheskii Zhurnal, Vol 50, No 10, 1971, pp 1595-1598

Abstract: *Rhipicephalus pumilio*, the tick which carries and transmits tularemia bacteria, can circulate the bacteria over a long time-span due to its ability to parasitize hares and other rodents at all stages of its development. The flooded fields in this region, on which cattle graze, create ideal conditions for the spread of the ixodid tick. *Dermacentor daghestanicus* is the dominant species because of its high percentage of infection by tularemia bacteria and because it preserves the bacteria in its body for a long period. Bacteriological studies were made of 117 mammals and 19,000 ticks of various species. In infected hares pathological-anatomic changes were manifested by enlargement of the spleen, in some cases by a change in the color and texture of the liver, and by the characteristic mound arrangement of cocci-bacteria in the spleen, liver, lungs, lymph nodes, and blood. 30 strains of *Pasteurella tularensis* were found in ixodid ticks and 7 strains, in the hare (*Lepus tolai*). These strains decompose glycerine and circulate in the tugai focus.

1/1

USSR

UDC 518.5:681.3.06

SURNIN, Yu. M., ROSHCINA, T. I.

"Plans of Algorithms for Construction of Technological Routes Through Systems for Automatic Planning of the Technology of Assembly of Units and Machines"

Tekhn. Kibernetika, Vyp. 6, [Engineering Cybernetics, No 6--Collection of Works], Kiev, 1970, pp 60-71, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. 5V664, unsigned).

Translation: Certain problems of formalized description of the technological routes of assembly of reducing gears are studied and the possibility of representing algorithms for planning technologies as matrix plans and automatic synthesis of these plans with subsequent minimization is analyzed.

1/1

1/2 024
UNCLASSIFIED
TITLE--CRYSTALLIZATION OF R SILLENITES UNDER HYDROTHERMAL CONDITIONS -U-
AUTHOR--(02)--SURNINA, V.S., FEDOSOVA, S.P.
COUNTRY OF INFO--USSR
SOURCE--KRISTALLOGRAFIYA 1970, 15(2), 395-6
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY, PHYSICS
TOPIC TAGS--CRYSTALLIZATION, BISMUTH, SINGLE CRYSTAL, WATER, THERMAL
EFFECT, METAL OXIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1995/0901
CIRC ACCESSION NO--AP0116411
STEP NO--UR/0070/70/015/002/0395/0396
UNCLASSIFIED

272 024
CIRC ACCESSION NO--AP0110411 UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION WAS STUDIED OF BY
SUB2 O SUB3 WITH VARIOUS OXIDES (R) IN AQ. SOLNS. OF NADH TO OBTAIN THE
CORRESPONDING SINGLE CRYSTAL SILLENITES. THE EXPTS. WERE MADE IN ALK-
AND ACID (HNO SUB3) SOLNS. AT 300-500DEGREES USING A METHOD AND APP.
DESCRIBED EARLIER (B. LITVIN AND TULES, 1968). EXPTL. DATA ARE
TABULATED FOR R EQUALS ZNO, CDO, HGO, BEO, NA SUB2 O SUB4 O SUB7, AL
SUB2 O SUB3, GA SUB2 O SUB3, NA SUB2 O SUB3, SIO SUB2, GEO SUB2, H SUB2
TIO SUB3, ZRO SUB2, FE SUB2 O SUB3, CO SUB2 O SUB3, CR(OH) SUB3, NB SUB2
O SUB5, V SUB2 O SUB5, NA SUB2 MOO SUB4, AND NA SUB2 WO SUB4.
FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

ENGINEERING
Aeronautical and Space

USSR

B O O K

UDC 629.78.036.7(075.8)

GUROV, A.F., SEVRUK, D.D., SUPNOV, D. N.

KONSTRUKTSIYA I RASCHET NA PROHNCST' KOSMICHESKIH ELEKTRODVAIGATELEY
(Design and Calculation of Strength Of Electric Propulsion Systems for Space),
Moscow ("Mashinostroyeniye") 1970, 491 pp, illus, biblio, 2,500 copies printed

Authorized by the Ministry of Higher and Intermediate Special Education RSFSR as a textbook for the aviation VUZ. Gives general information, drawings, formulas, graphs, tables on design of electrical propulsion systems for space and calculation of their strength and vibrations, and an estimate of their reliability. Designs of nuclear reactors, isotope sources, solar concentrators and chemical fuel elements are discussed, as are various types of converters. Methods are discussed for computing the strength and vibrations of turbine buckets and wheels, the bearing capacities of hydrostatic bearings and the critical speeds of turbo-generators mounted on liquid metal bearings. The method of computing the anode block of a thermo-emission type converter is also discussed. Temperature stresses in various parts of the systems are emphasized.

The book is intended for use as a text and for reference by engineers and designers working in space engineering. Ye. A. Yakovlev is the editor.

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USSR
GUROV, A.F., SEVNIK, D.D., SUPNOV, D. N., KONSTRUKTSIYA I RASCHET NA PROCHNUST'
KOSMICHESKIKH ELEKTROKAKETNYKH DVIGATELEY, M. 1970, 491 pp

Contents

	<u>Pages</u>
Foreword	3 - 4
Chapter I. Space Propulsion Systems Classification, Electric Propulsion System Requirements, Principal and Design Schemes, Reliability Problems, Questions Involving Strength Calculations	5 - 67
Chapter II. Space Propulsion System Power Generators Nuclear Reactors, Isotope Power Sources, Solar Concentrators, Fuel Elements	68-166
Chapter III. Converters Machine Converters, Thermo-emissive Converters, Thermoelectric and Photoelectric Converters	169-322
Chapter IV. Heat Exchangers	323-371
Chapter V. Engines Plasma and Ion Thrusters	372-470
Appendix. Strength Characteristics of Materials Used in Space Propulsion Systems	471-487

USSR

UDC: 621.382.233

ZAYTSEV, Yu. V., MARCHENKO, A. N., and SUROGIN, L. I.
"Fixed Semiconductor Resistors"

Kiev, Izvestiya VUZ--Radioelektronika, Vol 13, No 11, 1970, pp 1391-1393

Abstract: This brief communication reports a solution to the vexing problem of manufacturing precision, low-ohm resistors designed to operate in a wide temperature range. The material used is monocrystalline silicon with a high concentration of impurities. A cutaway view of the new resistor shows it to have the same shape and structural design as standard types. The process of its manufacture is given in some detail. A curve showing the tolerated electrical load as a function of the temperature is flat from 0 to 150° C, but drops off sharply and linearly to zero tolerated load at 275°C. A second curve of the temperature coefficient of resistance as a function of the silicon resistivity shows a rise in the temperature coefficient from 7 to 11%/degree over a resistivity range of 0.01 to 0.1 ohms cm. These resistors are designed for circuits requiring low temperature factors and high resistor accuracy. They have the added advantages of low noise level and the ability to sustain short-term overloading.

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USSR

UDC 613.71-612.17

LEVINA, L. I. and SUROV, Ye. N., State Twice Decorated Institute of Physical Culture imeni P. F. Lesgart

"Value of Valsalva's Test in Assessing Changes in the Terminal Part of the EKG Ventricular Complex After Physical Overexertion"

Kazan', Kazanskiy Meditsinskiy Zhurnal, No 6, 1972, pp 33-36

Abstract: Valsalva's test was taken by 36 athletes suffering from myocardial degeneration due to excessive physical exertion and showing changes in the terminal part of the EKG ventricular complex and by 36 athletes in good health and with a normal EKG (control). The EKGs recorded during the test reflected three types of reactions: (a) deepening of the S waves in the $V_{1-2-3-4}$ leads, lowering of the R waves in the $V_{3-4-5-6}$ leads, and T waves in the right thoracic leads 1 to 3 mm higher and those in the left leads 1 to 3 mm lower -- these are positional changes indicative of a clockwise turning of the heart around the longitudinal axis; (b) no significant positional changes; (c) complete normalization or marked improvement independent of change in the position of the heart. Follow-up studies of the athletes after they discontinued training revealed no EKG changes in those with the first two types of EKG reactions to the Valsalva test, evidence of the persistence of the degeneration. But in

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USSR

LEVINA, L. I. and SUROV, Ye. N., Kazanskiy Meditsinskiy Zhurnal, No 6, 1972,
pp 33-36

those with the third type of reaction, discontinuance of training resulted in
normalization or considerable improvement of the EKG, a sign that the degenera-
tion had been reversed.

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- 62 -

1/2 021

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--ASSOCIATION CONSTANTS OF PHENOL WITH CHALCONES AND THEIR ANALOGS
-U-

AUTHOR--(03)-TSUKERMAN, S.V., SUROV, YU.N., LAVRUSHIN, V.F.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(4), 874-9

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHENOL, KETONE, IR SPECTRUM, CHEMICAL SUBSTITUENT, ORGANIC
SULFUR COMPOUND, ORGANOSELENIUM COMPOUND FURAN, EQUILIBRIUM CONSTANT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3006/1498

STEP NO--UR/0079/70/040/004/0874/0879

CIRC ACCESSION NO--AP0135159

UNCLASSIFIED

021
CIRC ACCESSION NO--AP0135159 UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FROM IR SPECTRA THE EQUIL. CONSTS.
WERE CALCD. FOR SYSTEMS OF 23 KETONES OF TYPE P RC SUB6 H SUB4 COCH:CHC
SUB6 H SUB4 R PRIME1 P, WHERE R AND R PRIME1 WERE SELECTED FROM H; ME,
MEO, NME SUB2, PH, CL, BR; OR OF TYPE RCOCH:CHR PRIME1, WHERE R WAS
SELECTED FROM PH, 2,THIENYL,2,SELENIENYL,2,FURYL, STYRYL AND
2,(2,THIENYL)VINYL GROUPS. THE DATA AT 20, 35 AND 50DEGREES WERE
2,FURYL, OR STYRYL GROUPS. AND R PRIME1 FROM 2,THIENYL,2,SELENIENYL, PH,
TABULATED FOR SYSTEMS OF THESE KETONES WITH PHOH IN CCL SUB4. THE
EQUIL. CONSTS. WERE READILY CORRELATED WITH HAMMETT SUBSTITUENT CONSTS.
OF THE KETONES AND REPLACEMENT OF PY BY A HETEROCYCLIC GROUP INCREASED
THE PROTON ACCEPTOR CAPABILITY OF THE KETONG IN INCREASING ORDER:
2,THIENYL, 2,SELENIENYL, 2 FURYL. THESE ASSOCN. CONSTS. ARE SOMEWHAT
MORE SATISFACTORY CRITERIA FOR BASICITY OF THE CARBONYL GROUPS THAN ARE
THE FREQUENCY SHIFTS OF THE HO GROUP OF THE PROTON DONORS.
FACILITY: KHAR'KOV. GOS. UNIV. IM. GOR'KOGO, KHARKOV, USSR.

UNCLASSIFIED

172 010
UNCLASSIFIED
TITLE--B,5 FRAGMENT FORMED DURING THE SPLITTING OF PEPSIN BY CYANOGEN
BROMIDE -U- PROCESSING DATE--13NOV70
AUTHOR--(04)-SUROVA, I.A., AMIRKHANYAN, M.M., MATVEYEVA, R.A., STEPANOV,
V.M.
COUNTRY OF INFO--USSR
SOURCE--KHIM. PRIR. SOEDIN. 1970, 6(1), 144
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--PEPSIN, FRACTIONATION, CYANOGEN COMPOUND, BROMIDE, AMINO ACID
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/0563
CIRC ACCESSION NO--AP0131186
STEP NO--UR/0393/70/006/001/0144/0144
UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- UNCLASSIFIED
PROCESSING DATE--13NOV70
ABSTRACT. B-5 FRAGMENT OF PEPSIN,
REPRESENTING THE CENTRAL PART OF ITS MOL. AND ATTACHED TO THE N-TERMINAL
B-2 FRAGMENT OF THE ENZYME, WAS COMPOSED OF 40-5 AMINO ACIDS. ITS
STRUCTURE WAS AS FOLLOWS: ASP-GLY-GLU-THR-ILE-(THR, GLY, SER,
ALA)-.....-LEU-THR-GLY-PRO-THR-SER-ALA-....(SER, ALI, ILE)-NET.
FACILITY: INST. KHIM. PRIR. SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

USSR

Publications

MAKSIMENKO, V. A., NEKHOROSHEV, and SUROVIKIN, V.
Diving (Vodolaznoye Delo)

Moscow, 1971, DOSAAF Publishing House, 288 pp

Translation: Annotation: This book is intended for the training of divers and it was written in accordance with the program for training 3d class divers. For 1st and 2d class divers, the book may serve as a practical manual and reference tool on the operation and care of diving equipment and on safety measures and performance of a variety of diving tasks.

Besides the principal authors V. P. Maksimenko, A. S. Nekhoroshev, and the late V. D. Surovkin, the following specialists in diving and hydraulic engineering took part in writing the book: V. S. Razvodovski (Chapter 5), P. P. Nikitin (chapter 6), T. S. Leybovich (Chapter 7 and Chapter 10, in part), Yu. K. Senatitskiy (Chapter 7 in part), A. A. Rogov (chapter 8), and A. P. Loyko (Chapter 9).

The authors thank the diving specialists A. M. Gerasimov, B. V. Gromadskiy, N. Kh. Kesopulo, I. I. Rebink, and the physician-physiologist V. I. Tyurin for their help in writing this book.

Please send all comments and suggestions to Moscow, B-66, Novo-Ryazan-
skaya, 26, DOSAAF Publishing House.

1/8

USSR

MAKSIMENKO, V. A., et al., DOSAAF Publishing House, 288 pp

Introduction: Every year our country sees the construction of more and more gigantic hydraulic works, digging of thousands of kilometers of canals, laying of oil and gas pipes, and launching of river and ocean-going vessels. And everywhere, in all branches of the economy, thousands of highly skilled masters of diving are in demand.

Present-day diving is one of man's production activities which embraces all matters concerned with people descending in water in special equipment to perform underwater tasks or other assignments.

The development of underwater sports has led to the appearance of thousands of persons with diving skills. Underwater sports have great economic and military-applied significance.

Diving is hard work, but noble and honorable. Besides possessing good health, a knowledge of complex equipment, and familiarity with the principles of the physiology of underwater submersion, a diver must have a strong will, stamina, and a good eye. And this is not all. He must also be knowledgeable in locksmithing, carpentry, rigging, electric welding and so forth.

Rating of divers. Divers are divided into three classes according to their ratings: first, second, and third.

2/8

USSR

MAKSIMENKO, V. A., et al., DOSAAF Publishing House, 288 pp

The highest rating is that of "diving specialist". Depending on the job, diving specialists are subdivided into senior diving and chief diving specialists.

Diving work is divided into group I, II, and III according to the degree of difficulty involved.

Diving ratings are assigned by diving qualification commissions after suitable training, further training, and passing of examinations.

To keep his rating, a diver must work under water a certain number of hours a year. For example, a 3rd class diver of group I must complete at least 180 hours and those of groups II and III 90 and 60 hours, respectively.

The working conditions of divers differ substantially from those of persons on land. For this reason they have a shorter workday and receive additional pay for dives, lump-sum bonuses, and extra annual leave.

If a diver follows the established rules, he will be completely safe when under water.

This book, which was written in accordance with the program for training 3d class divers and with the "Standard Regulations for Work Safety in Diving," takes up all the fundamental questions concerned with underwater work as determined by the program

3/8

USSR

MAKSIMENKO, V. A., et al., DOSAAF Publishing House, 288 pp

CONTENTS

Introduction

From a plunger to a diver-deep-water man

Chapter I. PHYSICAL AND PHYSIOLOGICAL CHARACTERISTICS OF DIVING

Physical principles of diving

Brief characteristics of artificial mixtures used in diving

Regenerative substances used in diving

Exchange of gas mixtures in a diving suit

Concept of partial pressure of each gas forming atmospheric air

Main properties of water

Bouyancy and stability of divers

Propagation of light and sound in water

Brief information on human anatomy and physiology

Chapter II. DIVING EQUIPMENT

Physiological characteristics of diving (mechanical factors)

Definitions, classification, and comparative characteristics of diving

equipment

Ventilation equipment

Injector-regenerative equipment

4/8

- 99 -

USSR

MAKSIMENKO, V. A., et al., DOSAAF Publishing House, 288 pp

Regenerative diving equipment with an IDA-57 oxygen apparatus

Diving equipment with an AVM-1M air tank

Ukraine-2 aqualung

SHAP-40 hose apparatus

Diving suits

All-purpose diving equipment

Maintenance and periodic check of diving equipment

Disinfection of diving equipment

Repair and storage of diving equipment

Chapter III. FACILITIES AND EQUIPMENT FOR DIVING

Diving compressors

Control and measuring instruments

Means of underwater illumination

Diving telephone apparatus

Decompression (recompression) chambers

Diving devices

Maintenance, check, and storage of diving facilities

CHAPTER IV. DIVES AND SAFETY PRECAUTIONS

Organization of underwater descents

5/8

USSR

MAKSIMENKO, V. A., et al., DOSAAF Publishing House, 288 pp

Descent in a 3-bolt ventilated outfit
Descent in a VKS-57 air-oxygen outfit
Descent in a regenerative diving outfit with an IDA-57 apparatus
Descent in an outfit with an AVM-1M air-tank apparatus
Descent in a SHAP-40 apparatus
Descent under difficult conditions

Chapter V. DIVERS' DISEASES

Diseases that result from substantial drops in pressure
Divers' diseases caused by change in partial pressure of gases
Other diseases of divers

Chapter VI. FUNDAMENTALS OF RIVER HYDROLOGY AND HYDRAULIC WORKS

Fundamentals of river hydrology
Some types of hydraulic works in inland waters
Seaport hydraulic works

Hydraulic works of ship repair and shipbuilding enterprises

Chapter VII. DIVING ACTIVITIES

Instruments and technical means of carrying out diving activities
Ground-scouring and ground-pumping equipment
Ship raising pontoons

6/8

USSR

MAKSIMENO, V. A., et al., DOSAAF Publishing House, 288 pp

Means of controlling ship survivability

Emergency and rescue diving activity

Ship-raising diving activity

Underwater diving engineering activity

Safety measures in doing underwater engineering

Other diving activities

Work in raising dangerously explosive objects

Underwater concreting

Unusual diving activities

Chapter VIII. UNDERWATER PHOTOGRAPHY

Underwater photographic equipment

Demands made on objectives for underwater photography

Underwater moving picture apparatus

Deep-water photography

Underwater photographic and moving picture apparatus for underwater surveying

Chapter IX. BASIC INFORMATION ON RIGGING

Cables

Marine knots, marks, loops, splices

7/8

USSR

MAKSIMENKO, V. A., et al., DOSAAF Publishing House, 288 pp

Rigging tool

Rigging accessories and devices used in rigging

Chapter X. PRINCIPLES OF ORGANIZATION AND ECONOMICS OF DIVING

Planning underwater activities. Estimates, contracts.

APPENDIXES

BIBLIOGRAPHY

8/8

- 101 -

USSR

Exobiology

UDC 577.4

IMSHENETSKIY, A. A., MURZAKOV, B. G., and SUROVVOV, V. K., Institute of Microbiology, Academy of Sciences USSR

"Use of the Effect of "Soil Respiration" in the Search for Extraterrestrial Life"

Moscow, Mikrobiologiya, No 6, 1972, pp 1086-1090

Abstract: Experiments were performed with desert soil to determine whether the radioisotopic method (C^{14} -labeled glucose) to detect "soil respiration" is useful in the search for life on Mars. The microorganism *Pseudomonas fluorescens* or *Bacillus subtilis* was added to soil moistened with the labeled glucose. "Soil respiration" was not detected when the moisture content was below 4%. The optimum amount for decomposition of the glucose varied from 20 to 30% of the absolute weight of the soil. Dry or excessively wet soil did not release enough $C^{14}O_2$ to be recorded. Since the Martian atmosphere contains only trace amounts of water, the "soil respiration" method could not be successfully used to detect the presence of life on the planet. A more promising approach would be to inoculate Martian soil obtained in a future spaceflight onto a medium containing a radioactive substrate.

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USSR

UDC 669.18-412:621.746.753

DAVYDOVA, L. N., PIRUSSKIY, M. V., and SUROVOVA, V. N.

"Increasing the Resistance of 17GIS Steel to Brittle Fracture After Ladle Refining With Liquid Synthetic Slags"

Moscow, Stal', No 9, Sep 72, pp 795-798

Abstract: A comparative study was made of the cold brittleness of four 17GIS steel smeltings (a standard sheet 12.5 mm thick) obtained by: the conventional open-hearth method (I), with synthetic slag refining (II), with refining and strengthening by vanadium additions (III), and with refining and strengthening by vanadium and nitrogen additions (IV). Treatment of 17GIS steel with synthetic slag leads to a substantial temperature reduction in the transition to the brittle state (20 to 30°) and ensures better deformability under restricted conditions. With the application of dynamic and static loads, the onset of cracks and the development of strains in viscous and mixed fracture in 17GIS steel refined with synthetic slag is substantially higher than in conventional open-hearth steel. Nitride strengthening also increases resistance to brittle fracture. Synthetic-slag-refined 17GIS steel with nitrogen additions satisfies the requirements for metal used for the construction of large-diameter (220-1420 mm) pipelines in northern regions.

1/1

USSR

UDC 621.643.001.5

BORISOV, P. P., SEROVA, V. N., IVANOV, A. G., DAVYDOVA, L. N., and
RUSSIIAN, A. V., VNIIMontazhspetsstroy [All-Union Scientific Research Insti-
tute for Installation and Specialized Construction Operations]; ANUCHKIN,
M. P., VNIIST [All-Union Scientific Research Institute for the Construction
of Trunk Pipelines]

"Increasing the Breaking Strength of 17G1S Steel by Treating It With Synthetic
Slags"

Moscow, Stroitel'stvo Truboprovodov, No 7, Jul 71, pp 26-28

Abstract: The article describes results of a study at VNIIMontazhspetsstroy
on the ability of specimens of 17G1S steel, refined in a ladle with synthetic
slag, to resist the propagation of static and dynamic bending cracks in the
stressed state. For comparison, a study was also made of specimens of the
steel which had not been refined with synthetic slag. It was found that
treatment of 17G1S steel with synthetic slag in a ladle increases the crack
initiation and propagation energy under all testing conditions and hence the

1/2

USSR

BORISOV, P. P., et al., Stroitel'stvo Truboprovodov, No 7, Jul 71, pp 26-28
total energy to fracture. The treated steel is characterized by high resistance to crack propagation in the stressed state at low temperatures. The operating reliability of gas pipelines can be increased by using treated 17GLS steel.

2/2

- 87 -

USSR

UDC 66.046.51+541.121:536.7+532.72+532.529.6

KUNIN, L. L., GOLOVIN, A. M., SUROVOY, Ya. N., and KHOKHRIN, V. M.

Problemy degazatsii metallov. Fenomenologicheskaya teoriya (Problems of Metals Degassing. Phenomenological Theory), Moscow, "Nauka" Press, 1972, 327 pp., illustrations, graphs, tables, bibliographic references, 1600 copies printed.

Translation of Annotation: The book discusses the thermodynamic theory of solutions of gas impurities in metals, the phenomenological theory of their diffusion in solids and melts, principles of measuring thermodynamic and kinetic parameters in gas-metal systems, and mathematical description of degassing solids and melts. The monograph also covers problems comprising the theoretical basis for studying and determining gas contents in metals. The book is intended for scientists, engineers, and graduate students and students of senior courses specializing in physical chemistry, as well as for specialists of other areas of science and technology in which the problems of mass transfer of gas contaminants are of fundamental importance.

Translation of Table of Contents:

Foreword

Introduction

1/8

3
5

USSR
KUNIN, I. I. et al., Problemy degazatsii metallov. Fenomenologicheskaya teoriya, Moscow, "Nauka" Press, 1972.

PART ONE THERMODYNAMIC REGULARITIES OF GAS DISSOLUTION
IN METALS

Ch. I. Brief Data on Chemical Thermodynamics	18
1. Thermodynamic System	18
2. Thermodynamic Function	19
3. Conditions of Equilibrium	25
4. Partial Molar Values	27
Ch. II. Introduction to the Thermodynamic Theory of Solutions	31
1. General Aspects and Methods of Formulating the Composition	31
2. Gaseous Solutions	35
3. General Expression for the Chemical Potential of Components in the Solution, Activity, Activity Factor	43
4. Ideally Diluted Solutions. Henry Law and Raoult Law, Ideal Solutions	44
5. Selection of a Standard State. Transition of One Standard State to Another	46
6. Excess Thermodynamic Functions	50
7. Determination of Integral Thermodynamic Properties Via Partial Ones	52
8. Regular Solutions	54

2/8

- 82 -

USSR

KUNIN, L. L. et al., Problemy degazatsii metallov. Fenomenologicheskaya teoriya, Moscow, "Nauka" Press, 1972.

9. Hypothetical State of a Component in Solution. Diluted Regular Solutions	58
10. Interaction Parameters	64
Ch. III. Thermodynamics of Degassing Processes	76
1. Gas-Forming Impurities and Means of Degassing	76
2. Solubility of Diatomic Gases. Sieverts Law	79
3. Solubility of Gases in Alloys	86
4. Application of Interaction Parameters for Solubility Calculations in Multicomponent Alloys Based on a Single Solvent	90
Ch. IV. Transfer Processes and Flow Thermodynamics	99
1. Certain General Aspects	99
2. Continuity Equations	102
3. Other Laws of Conservation	104
4. Continuity Equations for Mixtures. Characteristic Velocities. Diffusive Flows	108
5. Thermodynamic Forces and Collective Flows	111
6. Onsager's Linear Equations	116
7. Diffusion Equation. Diffusion Factor	119
References	124
3/8	

USSR

KUNIN, L. L. et al., Problemy degazatsii metallov. Fenomenologicheskaya teoriya, Moscow, "Nauka" Press, 1972.

PART TWO

THEORY OF DEGASSING OF SOLIDS

Ch. V. Formulation of the Problem of Degassing of Solids

- | | |
|---|-----|
| 1. Gas-Forming Impurities | 126 |
| 2. Random-Movement Model (Ernst Model). Fokker-Plank Equation | 126 |
| 3. Terminal Conditions for the Diffusion Equation | 127 |
| 4. Boundary-Value Problems | 129 |
| 5. Problem Formulation on Degassing Semi-Infinite Space With Linear Boundary Value Conditions | 132 |

Ch. VI. Linear Problems in Degassing of Solids

- | | |
|--|-----|
| 1. First Boundary-Value Problem for Semi-Infinite Space | 133 |
| 2. First Boundary-Value Problem for Semi-Infinite Space in Degassing Into an Evacuated Volume | 135 |
| 3. Third Boundary-Value Problem for Degassing a Semi-Infinite Space | 138 |
| 4. Third Boundary-Value Problem on Condition of Gas Balance Over the Specimen Being Degassed. Degassing Into a Closed Volume | 140 |
| 5. Third Boundary-Value Problem for a Semi-Infinite Space on Condition of Gas Balance Over the Specimen Being Degassed. A Case of High-Velocity Evacuation | 143 |
| | 145 |

4/8

USSR

KUNIN, L. L. et al., Problemy degazatsii metallov. Fenomenologicheskaya teoriya, Moscow, "Nauka" Press, 1972.

6. Results of Treatment of Problems on Degassing a Semi-Infinite Space	148
7. Problems of Degassing Bounded Solids Under Similar Boundary-Value Conditions of the First Kind	149
8. Problem of Degassing a Sphere With Boundary-Value Conditions of the Third Kind. Pressure Above a Sphere Being Degassed	155
9. Steady-State Flow and Gas Permeability	158
Ch. VII. Nonlinear Problems of the Theory of Diffusion in Solids	163
1. Nonlinear Boundary-Value Conditions. Linearization	164
2. Problem of Degassing a Semi-Infinite Space With Nonlinear Boundary-Value Conditions of the Third Kind	167
3. Third Boundary-Value Problem for a Semi-Infinite Space With a Nonlinear Condition. Simplest Generalizations	171
4. Problem of Degassing a Sphere With Nonlinear Boundary-Value Conditions	174
5. Formulation of Problems With Allowance for the Specific Properties of a Diffusive Medium	180
6. Problem of Diffusion in a Semi-Infinite Space	184
7. McNabb's and Foster's Theory of Permeability	191
5/8 8. Problems With Diffusion Factors Being Functions of Concentration	195

USSR

KUNIN, L. I. et al., Problemy degazatsii metallov. Fenomenologicheskaya teoriya, Moscow, "Nauka" Press, 1972.

9. Nonisothermal Diffusion 199
References 205

PART THREE

CERTAIN THEORETICAL PROBLEMS OF DEGASSING
MELTS

Ch. VIII. Gravitational Thermal Convection in the Horizontal Layer of a Melt	208
1. Fundamental Equations	208
2. Origination of Convection in a Liquid Layer	211
3. Movement of a Liquid in a Convection Cell	215
4. Diffuse Flow on the Free Surface of a Liquid	223
5. Gravitational Convection During Heat Exchange at Boundary Surfaces	226
Ch. IX. Thermocapillary Convection	231
1. Fundamental Equations and Boundary Equations	232
2. Conditions for the Origination of Convection in Metal	235
3. Conditions for the Origination of Convection in Slag	236
4. Calculation of the Velocity Field Amplitude for a Liquid in a Diffuse Flow	237

6/8

USSR

KUNIN, I. L. et al., Problemy degazatsii metallov. Fenomenologicheskaya teoriya, Moscow, "Nauka" Press, 1972.

Ch. X. Gas Diffusion From the Melt Into a Gas Cavity With Low Peclet Numbers	
1. Fundamental Equations	239
2. Initial Stage of Growth	239
3. Asymptotic Growth of a Cavity	242
4. Cavity Growth at Low Supersaturation	244
Ch. XI. Movement and Diffuse Growth of a Cavity With Low Reynold's Numbers	246
1. Cavity Movement in a Viscous Liquid	249
2. Viscous Resistance of a Cavity in Oseen's Approximation	249
3. Quasi-Stationary Growth Rate of a Cavity	254
Ch. XII. Movement and Diffuse Growth of Spherical Cavity at High Reynolds Numbers	259
1. Equation of Motion for an Expanding Gas Cavity in an Ideal Liquid	261
2. Forces Acting on a Cavity in a Low-Viscosity Liquid	262
3. Lagrange Equations for a Gas Cavity in a Quasi-Viscous Liquid	264
4. Diffuse Flow Over the Surface of a Cavity	268
References	271
7/8	273

USSR
KUNIN, L. L. et al., Problemy degazatsii metallov, Fenomenologicheskaya teoriya, Moscow, "Nauka" Press, 1972.

PART FOUR

EXPERIMENTAL DATA AND ANALYTICAL METHODS

Ch. XIII. Methods of Determining the Thermodynamic Properties of Gas-Forming Impurities in Metals

- | | |
|--|-----|
| 1. Calorimetry | 274 |
| 2. Equilibrium Methods | 274 |
| 3. Emf Method | 275 |
| 4. Thermodynamic Properties of Gases in Metals | 282 |

Ch. XIV. Methods of Determining Diffusion Parameters

- | | |
|--|-----|
| 1. Study of Degassing Processes by Recording the Pressure in a Reaction Volume | 283 |
| 2. Study of Degassing Processes in an Intermediate Volume | 291 |
| 3. Inelasticity Methods | 292 |
| 4. Experimental Data | 295 |

References	299
Appendixes	301

References	307
------------	-----

	310
	324

USSR

UDC 621.311.25:621.039.003

MIKHAIL'TSEV, V. YE., SUROVTSEV, I. G., YAKOVLEV, V. YA.

"The Economy of a Power Plant with a Chemically Reacting Working Medium under Partial Power Operating Conditions"

Dissotsiruyushch. gazy kak teulonositeli i rab. tela energ. ustanovok — V sb. (Dissociating Gases as Heat Transfer Agents and the Working Medium of Power Plants — Collection of Works), Minsk, Nauka i Tekhn. Press, 1970, pp 138-144 (from RZh-Elektrotehnika i Energetika, No 5, May 1971, Abstract No 5U25)

Translation: A study was made of the quantitative and qualitative methods of regulating a plant operating with respect to a gas-liquid cycle. The operating peculiarities of the regenerator of the plant are indicated for these regulating procedures. The results of the calculational research indicating the great economy of the plant under uncalculated conditions are presented for the quantitative procedure, and the variation of the parameters of the plant for both regulating procedures is given. The economy of the plant with regeneration at high and low pressures is compared for qualitative regulation. There are 4 illustrations and a 3-entry bibliography.

1/1

USSR

UDC: 51

KARPOV, E. A., SUROVTSOV, I. K., NIGGOL', V. K.

"Concerning a Problem in the Dynamics of Forest Resources"

V sb. Primeneniye mat. v ekon. (Use of Mathematics in Economics--collection of works), vyp. 7, Leningrad, Leningrad University, 1972, pp 131-135 (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V484)

Translation: The paper presents a mathematical formulation of the problem of determining the extent of forest utilization for a planned period assuming a certain condition of dimensionality of utilization. The problem is treated from the standpoint of the mathematical theory of optimum processes. [From the introduction].

1/1

USSR

UDC 533.6:621.4

DANIL'CHENKO, K. P., SURUS, V. I.

"A Method of Combatting Suction Forces on Turbojet VTOL Aircraft"

Samoletost. i tekhn. vozd. flota. Resp. mezhved. temat. nauch.-tekhn. sb.
(Aircraft Construction and Technical Activities of the Air Force.
Republic Interdepartmental Thematic Scientific-Technical Collection),
1972, No. 27, pp 8-12 (from RZh-Mekhanika, No 8, Aug 72, Abstract No
8B540)

Translation: One of the possible methods for combatting suction forces on turbojet vertical takeoff and landing aircraft in take-off and landing and transitional flight regimes is discussed. The method consists of rotating the wing around an axis parallel to the plane of the earth in such a way that small angles are maintained between the cord of the wing and the thrust vector of the engine. A physical picture of the method is described and graphs are given supporting the fact that this method is more universal and effective as compared with familiar methods. It is noted that the method can be simply achieved on VTOL aircraft with engines in the fuselage. Authors abstract.

1/1

USSR

UDC: 519.214

SURVILA, P.

"On the Limiting Distribution of a Functional of a Sequence of Independent Random Quantities"

Lit. mat. sb. (Lithuanian Mathematics Collection), 1971, 11, No 2, pp 351-365
(from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V55)

Translation: Let $\{X_n\}$ be a sequence of independent random quantities with zero mathematical expectations and finite absolute third-order moments. It is assumed that

$$\sigma_n^2 = DX_n, B_n^2 = \sum_{j=1}^n \sigma_j^2, S_n = \sum_{j=1}^n X_j, \Phi_n(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^x e^{-\frac{t^2}{2}} dt + \frac{(1-x^2)e^{-\frac{x^2}{2}}}{6B_n^3 \sqrt{2\pi}} \sum_{j=1}^n EX_j^3.$$

Let $g(x)$ be integrable in Riemann's sense on the interval (a, b) and equal to zero outside this interval, and let $S(g) = \int_a^b g(x) dx \neq 0$. It is assumed that

$$Y_n = \sum_{j=1}^n g(S_j), Z_n = \frac{\sigma^2}{S(g) B_n} Y_n.$$

1/2

- 6 -

USSR

SURVILA, P., Lit. mat. sb., 1971, 11, No 2, pp 351-365

It is assumed that there exists a finite positive limit $\lim_{n \rightarrow \infty} \sigma_n^2 = \sigma^2$ and besides that the condition

$$P(S_n < xB_n) = \Phi_{\sigma_n}(x) + o\left(\frac{1}{B_n}\right)$$

is satisfied.

Proof is presented that under the enumerated conditions

$$\lim_{n \rightarrow \infty} P(Z_n < x) = \begin{cases} 0, & \text{if } x < 0, \\ \sqrt{\frac{2}{\pi}} \int_0^x e^{-\frac{t^2}{2}} dt, & \text{if } x > 0. \end{cases}$$

V. Petrov.

2/2

1/2 031 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--INDOLE DERIVATIVES. LXI. SYNTHESIS OF 4(5),(3,INDOLYL)IMIDAZOLE -U-

AUTHOR--(04)--SURVOROV, N.N., SMUSHKEVICH, YU.I., MARVANOYSKAYA, N.N.,
SULIMA, A.V.

COUNTRY OF INFO--USSR

SOURCE--KHIM. FARM. ZH. 1970, 4(2), 10-12

DATE PUBLISHED--70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CHEMICAL SYNTHESIS, IMIDAZOLE, INDOLE DERIVATIVE, NUCLEAR
MAGNETIC RESONANCE, UV SPECTRUM, IR SPECTRUM, MASS SPECTROSCOPY,
MOLECULAR STRUCTURE, MERCAPTAN, BENZENE DERIVATIVE, AROMATIC KETONE,
BACTERICIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/0530

STEP NO--UR/0450/70/004/002/0010/0012

CIRC ACCESSION NO--AP0113421

UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0113421

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MIXT. OF 8 G I AND 180 ML HCONH
SUB2 IS HEATED 1 HR AT 186DEGREES (BATH TEMP.) TO GIVE 50PERCENT II.H
SUB2 O, M. 74-6DEGREES (H SUB2 O); ANHYD. II, M. 158-9DEGREES, IS
OBTAINED BY DRYING OVER P SUB2 O SUB5 SEVERAL DAYS IN VACUO; II PICRATE
M. 241-2DEGREES (ETOH); II ADIPATE M. 159-60DEGREES (ETOH). THE II
STRUCTURE IS CONFIRMED BY ELEMENTARY ANAL., NMR, IR, AND MASS SPECTRA,
AND ALSO BY THE FOLLOWING SYNTHESIS. A SOLN. OF 0.5 G III IN ETOH WITH
1 G SKELETAL NI IS REFLUXED 1 HR WITH STIRRING TO GIVE 81PERCENT II.H
SUB2 O. IV.HCL (5 G) AND 22 G KSCN IS HEATED AT 210DEGREES (BATH TEMP.)
1 HR WITH STIRRING TO GIVE 16PERCENT III, M. 241-3DEGREES (AQ. ME SUB2
CO). THE UV SPECTRA OF II AND III ARE MEASURED IN 95PERCENT ETOH. THE
BIOL. ACTIVITY OF II IS TESTED. FACILITY: MOSK. KHIM. TEKHNOL.
INST. IM. MENDELEEVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 632.95

SURZHKOVA, L. V., and VASIL'YEV, A. F.

"Quantitative Analysis of Atrazine, Simazine and Propazine in a Commercial Product and Wettable Powders from Infrared Absorption Spectra"

V sb. Khim. sredstva zashchity rast. (Chemical Agents for Plant Protection -- collection of works), vyp 1, Moscow, 1970, pp 210-216 (from RZh-Khimiya, No 11, Jun 72, Abstract No 1:1N456)

Translation: The specimen is formed into pellets with KBr, and transmission is measured at absorption maxima of selected analytical bands, relative to tablets of pure KBr. A "Difference" method is used to determine optical densities. The theoretical errors of analysis are calculated, and the results are statistically analyzed.

1/1

1/2 011 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--CATALYST FOR METHANOL SYNTHESIS -U-
AUTHOR--(04)-SUSHCHAYA, L.E., BONDAR, P.G., GERNET, D.V., LELEKA, V.E.
COUNTRY OF INFO--USSR
SOURCE--U.S.S.R. 264,355
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBREZTSY, TOVARNYE ZNAKI, 1970 47
DATE PUBLISHED--03MAR70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--METHANOL, CATALYTIC ORGANIC SYNTHESIS, CHEMICAL PATENT, ZINC
OXIDE, CHROMIUM OXIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0846 STEP NO--UR/0482/70/000/000/0000/0000
CIRC ACCESSION NO--AA0136280
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0136280

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE CATALYST, CONSISTING OF ZNO AND CRO, CONTAINS NH SUB4 TUNGSTATE, NH SUB4 MOLYBDATE, AND URANYL NITRATE THAN CAN BE BROKEN DOWN EASILY TO THE CORRESPONDING OXIDES, AND WHICH WEIGH 0.001-2.0 WT. PERCENT (PREFERABLY 0.001-0.1 WT. PERCENT) OF THE CORRESPONDING OXIDE.

UNCLASSIFIED

USSR

UDC: 621.397.7

SUSHCHENKO, V. P., SEN'IVSKIY, I. I., MITINEV, V. A.

"A Device for Facsimile Recording on Electrochemical Paper"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 31, Nov 71, Author's Certificate No 318175, Division H, filed 30Dec69, published 19Oct71, p 214

Translation: This Author's Certificate introduces a device for facsimile recording on electrochemical paper. The device contains a scanning drum, a writing element pressed against paper, a spool for the paper roll, take-up rollers, and a heater. As a distinguishing feature of the patent, blurring of the image is reduced by locating the heater in an enclosed chamber with a horseshoe cross section which directs the heat rays through a slot in the chamber wall onto the paper in the region of contact with the writing element.

1/1

87

Acc. Nr:

A70048078

Abstracting Service:

INTERNAT. AEROSPACE

Ref. Code:

ABST 5-78 210057

A70-25122 #... Criteria for modeling the force exerted by a supersonic jet on an obstacle (O kriteriakh modelirovaniia silovogo vozdeistviia sverkhzvukovoi strui na pregradu). M. V. Shtokhovich, V. I. Pogorelov, and D. E. Tikhonov-Bugrov (Mekhanicheskii Institut, Leningrad, USSR). *Zhurnal Tekhnicheskoi Fiziki*, vol. 40, Feb. 1970, p. 395-397. In Russian.

Analysis of the parameters which define the force exerted by a jet on a target. These dimensionless parameters are determined with the aid of Sedov's (1954) dimensional analysis. It is shown that for a practical range of variation of the dimensionless parameters, the ratio of the axial force acting on the target to the nozzle thrust remains constant, and that it is independent of the number of nozzles. This result is verified experimentally, using air and argon jets. V.P.

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19791767

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USSR

UDC 51

BURIKOV, A. D., VOSKOV, L. S., and ~~SUSHCHINSKIY, I. M.~~

"Method of Solving Special-Type Discrete Programming Problem"

Tr. Mosk. in-ta elektron. mashinostr. (Works of Moscow Institute of Electronic Machine-Building), 1971, vyp. 16, Part 2, pp 111-117 (from RZh-Matematika, No 5, May 72, Abstract No 5V422 by YU.FINKEL'SHTEYN)

Translation: The conveyor-line synchronization problem is formulated as a special-type, integral linear-programming problem. To solve it, the authors suggest an approximation directed-sorting algorithm (in the majority of experiments conducted by the authors the algorithm yielded an exact solution).

1/1

- 19 -

USSR

UDC: 51

BURIKOV, A. D., VOSKOV, L. S., SUSHCHINSKIY, I. M.

"A Method of Solving a Discrete Programming Problem of Special Form"

Tr. Mosk. in-ta elektron. mashinostr. (Works of the Moscow Institute of Electronic Machine Building), 1971, vyp. 16, ch. 2, pp 111-117 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V422)

Translation: The problem of synchronizing a conveyer line is formulated as a special kind of integral linear programming problem. An approximate algorithm of directed sorting is proposed for solving it. (in most of the experiments done by the authors the algorithm gave an exact solution).
Yu. Finkel'shteyn.

1/1

- 24 -

USSR

UDC 621.375.82

SOKOLOVSKAYA, A. I., KUDRYAVTSEVA, A. D., SUSHCHINSKIY, M. M.

"Self-Focusing, Induced Raman Emission in Substances With Small Kerr Constants"

V sb. Nelineyn. protsessy v optike (Nonlinear Processes in Optics--collection of works), Vyp. 2, Novosibirsk, 1972, pp 262-266 (from RZh-Fizika, No 12, Dec 72, Abstract No 12D890)

Translation: A study is made of the self-focusing of laser radiation in a ruby in a modulated Q-factor mode and the induced Raman emission caused by it in liquid nitrogen and calcite as functions of the thickness of the scattering layer and the pumping energy of the laser. The experimental conditions are similar to those described previously (RZh-Fizika, 1972, 6D1130). In nitrogen induced Raman emission occurred in the inhomogeneities of the laser radiation, inside which self-focusing of the first Stokes component of induced Raman emission was also observed. The number of points of occurrence of induced Raman emission and self-focusing depended on the thickness of the nitrogen layer and the energy of the laser radiation. The first self-focusing ray was observed in nitrogen at a laser radiation energy of 0.013 joules. With an increase in the energy of the laser radiation the number of self-focusing rays increased to 30-40. A further increase in the laser radiation energy led to blurring of the pattern at the output end of

USSR

SOKOLOVSKAYA, A. I., et al., Nelineyn. protsessy v optike (Nonlinear Processes in Optics--collection of works), Vyp. 2, Novosibirsk, 1972, pp 262-266

the cuvette without significant increase in the number of self-focusing rays. In the cases of appearance of self-focusing near both ends of the cuvette, anti-Stokes radiation was observed along the axis. The self-focusing of the laser radiation with energies of 0.2-3 joules was observed in a maximum layer 100 mm thick. Only self-focusing of the induced Raman emission was observed, and self-focusing of the laser radiation was not detected. In as much as the calculated values of the self-focusing thresholds as a result of the Kerr nonlinearity appreciably exceeded the experimental values, the conclusion was drawn that self focusing was observed by an increase in polarizability of the molecules on excitation of them. The bibliography has 10 entires.

2/2

- 55 -

1/2 024 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--RAMAN EFFECT CROSS SECTIONS FOR SOME SINGLE CRYSTALS -U-
AUTHOR--(02)-GORELIK, V.S., SUSCHINSKIY, M.M.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1475-8
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, EARTH SCIENCES AND OCEANOGRAPHY
TOPIC TAGS--RAMAN EFFECT, RAMAN SPECTRUM, SINGLE CRYSTAL, SODIUM NITRATE,
QUARTZ, DIAMOND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3003/0171 STEP NO--UR/0181/70/012/005/1475/1478
CIRC ACCESSION NO--AP0129427
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0129427

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. CROSS SECTIONS OF RAMAN SCATTERING WERE MEASURED IN ORIENTED SINGLE CRYST. CALCITE, NANO SUB3, QUARTZ, AND DIAMOND IN THE EXCITATION OF THE RAMAN SPECTRA BY THE 5145-ANGSTROM LINE OF A POWERFUL AR LASER. THE CROSS SECTIONS FOR CALCITE AND NITRATE ARE CLOSE TO THE VALUES OBTAINED PREVIOUSLY FOR CRYST. POWDERS. THE RAMAN CROSS SECTION FOR THE DELTA SUBNU EQUALS 1332 CM PRIME NEGATIVE1 LINE OF DIAMOND AGREES WITH THE RESULTS OF THE THEORY OF LOUDON. FACILITY: FIZ. INST. IM. LEBEDEVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.791.793

SUSHCHUK-SLYUSARENKO, I. I., Candidate of Technical Sciences, SHABALIN, N. N., and ANDRIANOV, G. G., Engineers, and LYCHKO, I. I., Candidate of Technical Sciences, Institute of Electric Welding imeni Ye. O. Faton, Academy of Sciences Ukrainian SSR

"Some Procedures for Increasing Electroslag Welding Productivity"

Kiev, Avtomaticheskaya Svarka, No 2, Feb 74, pp 46-48

Abstract: To decrease thermal input (lowering superheating of drops and the molten metal bath) for electroslag welding a new method was proposed which involves, with continuous electrode feed, switching off the power to the consumable electrode periodically and using the accumulated heat in the bath to melt the additional material supplied during this period without any current. This new method yields the possibility of joining two plates without the danger of burn-through, and thinner plates can be used (40-50 mm minimum) as compared to conventional electroslag welding (100-150 mm). Also, the welding rate can be increased by 50% using the new method. Other merits of this new method are increased productivity, improved weld joint quality, and reduced overheating of the heat-affected zone. Three figures, five bibliographic references.

1/1

USSR

UDC 621.791.756:621.747.58

YAKOVLEV, V. F., KOVALKIN, P. I., YEVDOKIMOV, N. I., KOZULIN, M. G., and
SUSHCHUK-SLYUSARENKO, I. I.

"Electroslag Welding of Steel Casting Defects"

Kiev, Avtomaticheskaya Svarka, No 2, Feb 70, p 72

Abstract: A description is given of a technique of electroslag welding and building-up of steel casting defects. Using a water-cooled copper nonconsumable electrode, a slag bath is drawn which is then heated for a period of 15-60 min. During this time, the edges to be welded are heated to 800-1200°C, and under the effect of the heated slag the surface of the aperture is chemically cleaned. For welding the defect, the nonconsumable electrode is replaced by a spatial one which is consumable along the shape of the profile of the welded aperture. The direction of the fed welding wires plays an important role in the initial stage of fusion of the deposited metal.

1/1

1/2 016
TITLE--SOLID ROTOR -U- UNCLASSIFIED PROCESSING DATE--23OCT70
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PROCESSING DATE--2300170

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ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. MICROFICHE OF ABSTRACT CONTAINS GRAPHIC INFORMATION. SOLID ROTOR USED FOR AN A. C. ELECTRIC MOTOR ACHIEVES A HIGHER THERMAL STABILITY OF DAMPING SYSTEM DURING STARTING AND IN ASYMMETRICAL OPERATION. THE ROTOR DAMPING SYSTEM INCLUDES TEETH (1) AND METAL WEDGES (2) IN SLOTS (3). THE SHORTING RINGS (4,5) ARE MADE BY FORMING A LAYER OF ELECTRICALLY MOLTEN COPPER ON THE END OF THE ROTOR AND IN A RECESS OF THE SHAFT; THE ROTOR SLOTS ARE MILLED AFTERWARDS. WEDGES (2) ARE IN CONTACT WITH THE SHORTING RING ALONG ITS THICKNESS (A). IN ASYMMETRICAL OPERATION EDDY CURRENTS ARE INDUCED IN THE TEETH AND WEDGES WHICH ARE SHORTED BY THE RINGS (4,5).
FACILITY: INSTITUT ELEKTRODINAMIKI AN UKRAINSKOY SSR, INSTITUT ELEKTROSVARKI IM. YE. O. PATONA I LYSIVENSKIY TURBOGENERATORNIY ZAVOD.

UNCLASSIFIED

USSR

UDC 621.791.793

VOLOSHKEVICH, G. Z., SUSHCHUK-SLYUSARENKO, I. I., LYCHKO, I. I., KHRUNDZHE, N. M., Institute of Electric Welding im. Ye. O. Paton AN UkrSSR

"Some Means for Improvement of Electroslag Welding"

Kiev, Avtomaticheskaya Svarka, No 12, 1972, pp 5-9

Abstract: Characteristics of the electroslag welding method are discussed. The prospects for future development of the electroslag welding method are noted. The method is particularly promising for welding of extremely thick metal structures, although the welding rate is generally rather low for thick structures (less than 1 m/hr). Areas for further research are suggested, including: investigation of the properties of the seam zone in steels welded by the method; creation of new types of steels not requiring high-temperature heat treatment after electroslag welding; search for technological means of improving the structure of the seam zone after welding and tempering; development of means for improvement of the mechanical properties of seam metal after welding and tempering by changing the chemical composition; creation of effective methods of local and surface high-temperature heat treatment; development of measures for conservation of the shape of products with general high-temperature heat treatment; improvement of impact testing methods; and

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USSR

VOLOSHKEVICH, G. Z., et al., Avtomaticheskaya Svarka, No 12, 1972, pp 5-9

determination of the necessary areas for the application of high-temperature heat treatment by classification of products as to composition, usage temperature, nature of loading, presence of stress concentrators, etc.

2/2

- 64 -

USSR

UDC 621.355.8.035.4

VOLDIN, R. V., SUSHENTSOVA, S. N., and MELYUTIN, N. N.

"Wettability of the Housing and Flow of Electrolyte in Hermetically Sealed Nickel-Cadmium Batteries"

Sb. rabot no khim. istochnikam toka Vses n.-n akkumulyator. in-t (Collection of Works on the Chemical Source of Current. All-Union Scientific Study Institute for Storage Batteries) Vyp 7, 1972, pp 161-163 (from Referativnyy Zhurnal -- Khimiya, No 8(II), 1973, Abstract No 81235 by V. S. Levinson)

Translation: Results are given for study of the wettability of steel 08KP, used to make the housings of alkali batteries, by a solution of alkali at different surface potentials of the metal. The greatest wettability, determined from the increased tendency of the electrolyte to flow over the battery housing, was observed for electrical junctions of the body with the negative terminal of the electrode and the least for the isolation of the case from the working electrode.

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- 9 -

SUSHKEVICH, K.D.

SPK 59208
6.79

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XI-7. SOLUBILITY OF CADMIUM TELLURIDE IN SOME METALS

(Article by I. K. Andryushin, K. D. Sushkevich, Z. P. Kuleva, Kishinev, Novosibirsk, in Sbornik po Prikladnoi Khimii, 1972, No. 1, p. 137)

In order to obtain perfect crystals of the semiconductor compounds, recently the method of growth from a solution has become widespread.

For proper selection of the growth conditions it is necessary to know the temperature dependence of the solubility of the semiconductor material in one solvent or another. For this purpose, the solubility of cadmium telluride in Ga and In was investigated.

A study was made in a quartz vessel of special design in an atmosphere of argon free of oxygen with a residual pressure of 50-100 mm Hg. The solution process was realized until saturation of the solvent with cadmium telluride was achieved at the corresponding temperature under the conditions of good mixing.

The solubility data are presented in the table.

Temp, °C	100	200	300	400	500	600	700	800
Cadmium telluride weight in solvent, g	0.016	0.077	-	0.43	0.97	2.15	3.45	7.06
Temp, °C	0.45	1.72	4.22	9.40	11.3	17.1	20.1	

SUSHKEVICH, R.D.

STAS 52028
6-73

XI-14. CHARACTERISTIC FEATURES OF OBTAINING CATHODIC TELLURIDE CRYSTALS FROM A SOLUTION-MELT

[Article by I. K. Andronik, R. D. Sushkevich, Lishiney Novosibirsk, III Simpozium Prostranstva i Vremeni, 1972, p. 160]

In order to obtain cadmium telluride crystals, the method of zone recrystallization from the solution-melt in the zone enriched with tellurium was used.

The advantages of this method consists in the fact that it is possible to obtain homogeneous single crystals of practically unlimited dimensions with admixture carriers (for displacement of defects and low concentrations with bar takes place simultaneously). Inasmuch as recrystallization of the probability of diffusion of the admixtures from the crucible material into the zone in the zone, and it was found within the limits of 700-800°C. The liquid cadmium telluride at the rate of 0.5-1.2 mm/hour.

of 10^2 holes/cm. The density of the etching holes in the crystals obtained is on the order of 10^2 holes/cm. At room temperature the characteristic conductivity is observed, the specific resistance 10^9 ohm-cm, and the electron mobility is near 1700 cm²/v-sec.

Radiobiology

USSR UDC 616.136.4+616.149.21]-001.29-092.9-085.276-059:615.355:577.156.014

UKLONSKAYA, L. I., KUDRYAVTSEV, V. D., SUSHKEVICH, L. N., and CHERKASOV, V. F., Department of Radiation Pathophysiology (Chief, Prof. V. P. Baluda), Scientific Research Institute of Medical Radiology, Academy of Medical Sciences USSR, Obninsk

"The Effect of Antiphlogistic and Antiproteolytic Preparations on Vascular Disturbances of the Intestines of Animals Irradiated by Superlethal Doses"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 76, No 8, Aug 73, pp 37-39

Abstract: In experiments conducted on rats irradiated with superlethal doses of Co⁶⁰ gamma-rays (900 and 1000 r), antiphlogistic (butadion -- 5 mg/kg, paracetamol -- 15 mg/kg, and rheopyrene -- 3 mg/kg) and antiproteolytic (trasyloi -- 7.5 CIU/kg in combination with E-aminocaproic acid -- 200 mg/kg) preparations were injected intraperitoneally. The functional condition of the vascular wall of the small and large intestines of rats was assessed 72 hours after irradiation by the appearance of Evans blue in the intestinal tissues.

Butadion, which considerably diminished the amount of stain in the tissue, proved to be the most effective. It also increased the survival period

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UKLONSKAYA, L. I., et al., Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 76, No 8, Aug 73, pp 37-39

of the irradiated animals; this permitted the supposition to be made that vascular disturbances played a definite role in the pathogenesis of the intestinal form of radiation sickness. 2 figures. 13 references.

2/2

- 69 -

USSR

UDC 539.2

SUSHKEVICH, T. N., Chernovitskiy State University

"Rules for Selecting Dipole and Quadrupole Transitions for Crystals of Monoclinic Syngony"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, No 7, 1971, pp 155-159

Abstract: The set of symmetry properties associated with a given point in the Brillouin zone determines the selection rules for absorption of polarized electromagnetic radiation by the material. The probability of transition per unit of time is proportional to the square of the matrix element of the energy of interaction corresponding to the initial and final states of the electron. Here the author studies the transitions for which $k_1 + q = k_j$, where k_1 and k_j are the initial and final wave vectors of the electron. He confines himself to the case of long waves. He expresses his findings in the form of tables and schematics; the tables show the selection rules for dipole and quadrupole transitions respectively. Figure 1 is a diagram of the Brillouin zone for a simple lattice of monoclinic syngony, and Figure 2 shows the Brillouin zone of a lattice with two opposite and centered side faces of monoclinic syngony. The article contains 2 figures, 2 tables, and 3 bibliographic entries.

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345HKIN, N.B.

Lunar geology

PROBLEMS OF LUNAR GEOLOGY

Edited by A. V. Beyre

Translation of "Problemy Geologii Lunny."
"Nauka" Press, Moscow, 1969

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(13)

ANCIENT SEAS OF THE MOON

A. I. Sukhanov

ABSTRACT. Research on lunar maria performed by American and Russian scientists is discussed. The discussion begins with the analysis of J. E. Spurr in 1944.

FEATURES OF LAVA-SHEET FORMATION ON THE MOON

A. A. Guklin, Ye. H. Rykova, N. V. Stolyarkina,
N. M. G. Gushina and I. A. Fomina

ABSTRACT. Observations of volcanic activity on the moon are discussed. The heat losses experienced by the lava due to radiation, convection and other processes are analyzed. Other problems analyzed include hardening of the lava, bubble rising in the melt, and other physical phenomena.

x

USSR

UDC: 621.372.413.001.24

ISHCHENKO, Ye. F. and SUSHKIN, V. N.

"Using Similarity Laws for Computing Resonators With Coupling Apertures"

Moscow, Radiotekhnika i elektronika, No 8, 1972, pp 1566-1572

Abstract: A simple method is proposed for determining the parameters of resonators widely used in practice, with losses of 5% and more. It is first shown that, with large coupling apertures, resonators having circular spherical mirrors are equivalent, all other things being equal, to those with ribbon cylindrical mirrors. The equation for resonators of the first type is derived and compared with the equation for the second, and it is shown that the difference between the two is less than 4% if the Fresnel number of the aperture is at least 0.5. Because this error is so slight, the design of resonators with coupling apertures is substantially simplified, as is shown through the use of a resonator with plane circular mirrors as an example. The method proposed was checked for accuracy and utilization limitations by comparing its results with the results obtained by the method of successive approximations as computed on an electronic digital computer. The authors wish to thank V.A.Fabrikant for his interest and helpful comments.

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USSR

UDC 621.375.82

SUSHKIN, V. N.

"Calculation of Characteristics of Laser Cavities With Coupling Apertures"

Tr. Mosk. energ. in-ta (Works of Moscow Power Engineering Institute), 1972, vyp. 108, pp 114-116 (from RZh-Fizika, No 8, Aug 72, Abstract No 8B1038 by V. B. Khalfin)

Translation: A method is suggested for calculating the characteristics of optical cavities with coupling apertures according to the Fox-Li iteration method. Its novelty consists in the use of a formula for numerical calculation of the integrals encountered in the problem, of the form $\int_a^b \cos(px) f(x) dx$; this formula yields an error of the same order as Simpson's formula in the calculation of the integral $\int_a^b f(x) \cdot dx$. Since in this problem $\cos(px)$ is a rapidly varying function, use of the above formula makes possible a significant reduction of machine time, as was verified experimentally.

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- 29 -